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IN THE CLAIMS

1. (Previously Presented) A method of producing cumene hydroperoxide comprising:

reacting in a series of oxidation reactors oxygen with cumene by passing the oxygen through a water-cumene emulsion in a presence of a mixture of an aqueous solution of an ammonium salt with a concentration of 0.001-0.5 mass % based upon a total mass of the aqueous solution of the ammonium salt and an aqueous solution of ammonia with a concentration of 0.001-0.5 mass % based upon a total mass of the aqueous solution of the ammonia, wherein the mixture is fed into each oxidation reactor of the series of oxidation reactors in an ammonia: ammonium salt mass ratio of between 1:100 to 100:1;

wherein the ammonium salt is selected from the group consisting of ammonium bicarbonate, ammonium carbonate, ammonium carbamate, and a mixture thereof.

2. (Previously Presented) A method according to claim 1, wherein the method is conducted at a temperature of 100-120° C in a first oxidation reactor of the series of oxidation reactors with a gradual decrease to 80-90° C in a last oxidation reactor of the series of oxidation reactors and at a gage pressure of up to 5 atm.

3. (Previously Presented) The method according to claim 1, further comprising forming the ammonium salt by reacting carbon dioxide with ammonia in the presence of an aqueous feed stream for one of the oxidation reactors of the series of oxidation reactors.

4. (Cancelled)

5. (Previously Presented) The method according to claim 1, wherein the ammonia: ammonium salt mass ratio is 1:10 to 10:1.

6. (Previously Presented) The method according to claim 1, wherein the oxygen is from air.

7. (Previously Presented) A method of producing cumene hydroperoxide comprising:

reacting in a series of oxidation reactors oxygen with cumene by passing the oxygen through a water-cumene emulsion in a presence of a mixture of an aqueous solution of an ammonium salt with a concentration of 0.001-0.5 mass % based upon a total mass of the aqueous solution of the ammonium salt and an aqueous solution of ammonia with a concentration of 0.001-0.5 mass % based upon a total mass of the aqueous solution of the ammonia, wherein the mixture is fed into each oxidation reactor of the series of oxidation reactors in an ammonia: ammonium salt mass ratio of 1:10 to 10:1, wherein the method is conducted at a temperature of 100-120° C in a first oxidation reactor of the series of oxidation reactors with a decrease to 80-90° C in a last oxidation reactor of the series of oxidation reactors and at a gage pressure of up to 5 atm, and wherein the ammonium salt is selected from the group consisting of ammonium bicarbonate, ammonium carbonate, ammonium carbamate, and a mixture thereof.

8. (Previously Presented) A method of producing cumene hydroperoxide, comprising:

forming ammonium salt by reacting carbon dioxide with ammonia in the presence of an aqueous feed stream; and

reacting oxygen with cumene by passing the oxygen through a water-cumene emulsion in a presence of a mixture of the ammonium salt and the ammonia;

wherein the mixture is fed in an ammonia: ammonium salt mass ratio of 1:100 to 100:1.

9. (Previously Presented) The method according to claim 8, wherein the ammonium salt is selected from the group consisting of ammonium bicarbonate, ammonium carbonate, ammonium carbamate, or a mixture thereof.

10. (Previously Presented) The method according to claim 8, wherein the ammonium salt comprises ammonium carbamate.

11. (Previously Presented) The method according to claim 8, wherein the ammonia: ammonium salt mass ratio is 1:10 to 10:1.

12. (Previously Presented) The method according to claim 8, wherein the method is conducted at a temperature of 100-120° C in a first oxidation reactor with a gradual decrease to 80-90° C in a last oxidation reactor, and at a gage pressure of up to 5 atm.

13. (Previously Presented) The method according to claim 8, wherein the mixture of the ammonium salt and ammonia comprises

an aqueous solution of the ammonium salt with a concentration of 0.001-0.5 mass % based upon a total mass of the aqueous solution of the ammonium salt, and

an aqueous solution of the ammonia with a concentration of 0.001-0.5 mass % based upon a total mass of the aqueous solution of the ammonia.

14. (Previously Presented) The method according to claim 8, wherein the reacting of the oxygen with the cumene is in the absence of a neutralizing agent that forms a solid deposit on heat-exchanging equipment.

15. (Previously Presented) The method according to claim 14, wherein the neutralizing agent comprises sodium salt.

16. (Previously Presented) The method according to claim 1, wherein the reacting of the oxygen with the cumene is in the absence of a neutralizing agent that forms a solid deposit on heat-exchanging equipment.

17. (Previously Presented) The method according to claim 15, wherein the neutralizing agent comprises sodium salt.

18. (Previously Presented) The method according to claim 1, further comprising forming the ammonium salt by reacting carbon dioxide with the ammonia.

19. (Previously Presented) The method according to claim 1, wherein the ammonium salt is ammonium carbamate.